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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,042	07/11/2001	K. Michael Han	0180129	1940

25700 7590 10/07/2004

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EXAMINER
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WOJCIECHOWICZ, EDWARD JOSEPH

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/904,042	Applicant(s) HAN, K. MICHAEL	
	Examiner Edward Wojciechowicz	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8,9,14-17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8,9,14-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

Applicant's arguments, in the Appeal Brief, filed 7-15-04, with respect to the rejection of claims 8, 9, 15-17, and 19-22 are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection is made.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Mazure et al, newly cited. The reference to Mazure shows a field effect transistor as claimed, for example, in Fig. 1F, which includes a substrate (10), having first (28) and second (28) regions of one conduction type, and a third region therebetween of an opposite conduction type, a gate insulating layer (14 and 24) situated over an entire length of the third (channel) region and substantially less than an entire length of each of the first region (28) and the second region (28), where the gate insulating layer has a first thickness (24) situated over the first and second regions, and a second thickness (14) situated over the third region, and where the first thickness (24) is greater than the second thickness (14), and wherein the first and second thicknesses are substantially uniform, and a control gate (16) situated over the gate insulating layer. The gate insulating layer may also comprise SiO<sub>2</sub> (see col. 3, l.15-25).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazure in view of Tsukiji. The Tsukiji reference, of record, also teaches the formation of a field effect device having different gate insulator thicknesses over the source/drain as opposed to the channel, and teaches the use of an additional ONO (207) stack situated over the gate insulating layer, as claimed. This addition to the Mazure device would be motivated by the fact that Mazure already uses additional insulator layers (18 and 30) over his gate insulating layer, and ONO layers are well known in the art for their superior insulating properties.

Claims 14-16 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazure in view of Tsukiji and Libera et al, both of record. The reference to Libera also shows a field effect transistor device, similar to those of Mazure and Tsukiji, with a gate insulator layer that has different thicknesses over the source, drain and channel regions, and which teaches specific dimensions for these insulator layers. For example, Libera states that the thinner portion of the gate insulator layer may be approximately 80 Angstroms thick (col. 2, l.5-10), which would be 8nm, and within the same range of thickness claimed by applicant. Coupling this teaching with that of Tsukiji, who teaches that the thicker insulator portions can typically be three or four times thicker than that of the thinner insulator portions, one skilled in this art would be motivated to form the thicker insulator portions in the range of 24 to 32 nm, which is also within the same range of thickness claimed by applicant.

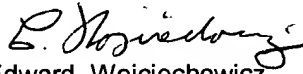
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Since the cited references teach the same range of insulator thicknesses as those claimed by applicant, the prior art devices would inherently generate the same ranges of injection field strengths as claimed in the instant invention.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Wojciechowicz whose telephone number is 571-272-1739. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Edward Wojciechowicz  
Primary Examiner  
Art Unit 2815

EW: ew

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
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